

09/1104, 448.

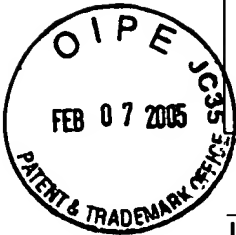
020905

Cofc \$

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV 307 814 144 US, in an envelope addressed to: MS Post Issue, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below

Dated: 2/7/05 Signature: *[Signature]*
(Lon Giuffrida)

Docket No.: 60693US (49163)
(PATENT)



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Letters Patent of:
Barry J. Byrne et al.

Patent No.: 6,783,972 B1

Issued: August 31, 2004

For: METHODS FOR LARGE-SCALE
PRODUCTION OF RECOMBINANT AAV
VECTORS

REQUEST FOR CERTIFICATE OF CORRECTION
PURSUANT TO 37 CFR 1.323

MS Post Issue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Certificate
FEB 16 2005
of Correction

Dear Sir:

Upon reviewing the above-identified patent, Patentee noted an error concerning an omission of an Assignee which should be added and/or corrected.

Applicants inadvertently failed to request listing of the co-assignee, The Johns Hopkins University, when submitting the payment of Issue Fee. Included with this request are copies of the recorded assignment documents clearly showing that The Johns Hopkins University and University of Florida Research Foundation are co-assignees. Should a fee be required under 37 CFR §120(a), please charge our Deposit Account No. 04-1105 in the amount of \$100.00.

The omission now sought to be corrected is our inadvertent error, the correction of which does not involve new matter or require reexamination.

02/11/2005 SSITHIB2 00000129 041105 6783972
01 FC:1811 100.00 DA

FEB 17 2005

Transmitted herewith is a proposed Certificate of Correction effecting such amendment. Patentee respectfully solicits the granting of the requested Certificate of Correction.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105, under Order No. 60693US (49163).

Dated: February 7, 2005

Respectfully submitted,

By Barbara S. Kitchell

Barbara S. Kitchell

Registration No.: 33,928

EDWARDS & ANGELL, LLP

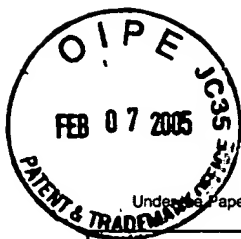
P.O. Box 55874

Boston, Massachusetts 02205

(203) 353-6848

Attorney for Applicant

FEB 17 2005



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PTO/SB/44 (04-04)
Approved for use through 04/30/2007. OMB 0651-0033
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 6,783,972 *B1*
DATED : August 31, 2004
INVENTOR(S) : Barry J. Byrne et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

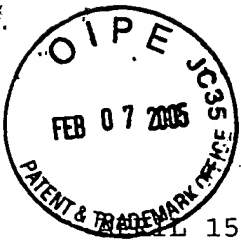
****ASSIGNEE**:** Please add the following additional Assignee:

**THE JOHNS HOPKINS UNIVERSITY
BALTIMORE, MD (US)**

MAILING ADDRESS OF SENDER:
Barbara S. Kitchell
EDWARDS & ANGELL, LLP
P.O. Box 55874
Boston, Massachusetts 02205

PATENT NO. 6,783,972

No. of additional copies



BSL



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

FEB 15, 2000

PTAS
WILLIAMS, MORGAN, & AMERSON, P.C.
DAVID W. HIBLER
7676 HILLMONT, SUITE 250
HOUSTON, TEXAS 77040

DOCKETING DEPT.



101264877A

APR 20 2000

WILLIAMS, MORGAN & AMERSON

UNITED STATES PATENT AND TRADEMARK OFFICE
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 01/10/2000

REEL/FRAME: 010530/0762
NUMBER OF PAGES: 4

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:

BYRNE, BARRY J.

DOC DATE: 12/16/1999

ASSIGNOR:

MUZYCZKA, NICHOLAS

DOC DATE: 12/16/1999

ASSIGNOR:

ZOLOTUKHIN, SERGEI

DOC DATE: 12/16/1999

ASSIGNEE:

FLORIDA, UNIVERSITY OF
1938 W. UNIVERSITY AVENUE
GAINESVILLE, FLORIDA 32603

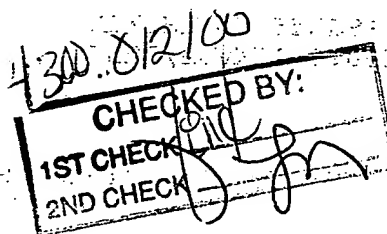
SERIAL NUMBER: 09404448

FILING DATE: 09/22/1999

PATENT NUMBER:

ISSUE DATE:

ENCLOSURE FIELD: 01/10/2000



ASSIGNMENT

FOR GOOD AND VALUABLE CONSIDERATION, the receipt, sufficiency and adequacy of which are hereby acknowledged, the undersigned, do hereby:

SELL, ASSIGN AND TRANSFER to University of Florida (the "Assignee"), having a place of business at 1938 W. University Avenue, Gainesville, Florida, 32603, our entire right, title and interest for the United States and all foreign countries in and to any and all improvements which are disclosed in the application for United States Letters Patent, Serial No. **09/404,448** which has been filed on **September 22, 1999** and is entitled "**METHODS FOR LARGE-SCALE PRODUCTION OF RECOMBINANT AAV VECTORS**", such application and all divisional, continuing, substitute, renewal, reissue and all other applications for patent which have been or shall be filed in the United States and all foreign countries on any of such improvements; all original and reissued patents which have been or shall be issued in the United States and all foreign countries on such improvements; and specifically including the right to file foreign applications under the provisions of any convention or treaty and claim priority based on such application in the United States;

AUTHORIZE AND REQUEST the issuing authority to issue any and all United States and foreign patents granted on such improvements to the Assignee;

WARRANT AND COVENANT that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been or will be made to others by the undersigned, and that the full right to convey the same as herein expressed is possessed by the undersigned;

COVENANT, when requested and at the expense of the Assignee, to carry out in good faith the intent and purpose of this assignment, the undersigned will execute all divisional, continuing, substitute, renewal, reissue, and all other patent applications on any and all such improvements; execute all rightful oaths, declarations, assignments, powers of attorney and other papers; communicate to the Assignee all facts known to the undersigned relating to such improvements and the history thereof; and generally do everything possible which the Assignee shall consider desirable for vesting title to such improvements in the Assignee, and for securing, maintaining and enforcing proper patent protection for such improvements;

TO BE BINDING on the heirs, assigns, representatives and successors of the undersigned and extend to the successors, assigns and nominees of the Assignee.

Signature: [Signature]
Name: Barry J. Byrne

Date: 12/16/99

STATE OF FLORIDA)
) ss.
COUNTY OF Alachua)

BEFORE ME, the undersigned authority, on this 16 day of Dec., 1999, personally appeared Barry J. Byrne, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same of his own free will for the purposes and consideration therein expressed.

Vicky R. Parrott
Notary or Consular Officer

[SEAL]



Vicky R. Parrott
MY COMMISSION # CC864994 EXPIRES
August 22, 2003
BONDED THRU TROY FAIR INSURANCE, INC.

Signature: Nicholas Muzyczka
Name: Nicholas Muzyczka

Date: 12/16/99

STATE OF FLORIDA)
) ss.
COUNTY OF Alachua)

BEFORE ME, the undersigned authority, on this 16 day of Dec., 1999, personally appeared Nicholas Muzyczka, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same of his own free will for the purposes and consideration therein expressed.

Vicky R. Parrott
Notary or Consular Officer

[SEAL]



Vicky R. Parrott
MY COMMISSION # CC864994 EXPIRES
August 22, 2003
BONDED THRU TROY FAIR INSURANCE, INC.

Signature: _____

Name: Sergei Zolotukhin

Date: _____

12/16/99

STATE OF FLORIDA)

)

ss.

COUNTY OF Alachua)

)

BEFORE ME, the undersigned authority, on this 16 day of Dec., 1999, personally appeared Sergei Zolotukhin, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same of his own free will for the purposes and consideration therein expressed.

Vicky R. Parrott
Notary or Consular Officer

[SEAL]



Vicky R. Parrott
MY COMMISSION # CC364994 EXPIRES
August 22, 2003
BONDED THRU TROY FAIR INSURANCE, INC

010530/0762 PAGE 2

ALLYSON PURNELL, EXAMINER
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS

02-10-2000

FORM PTO-1595
(Rev. 6-93)

RE



U.S. Department of Commerce

OMB No. 0651-0011 (exp. 4/94)

101264877

Patent and Trademark Office

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original document or copy thereof.

1. Name of conveying party(ies):

Barry J. Byrne, Nicholas Muzyczka and Sergei ZolotukhinAdditional name(s) of conveying party(ies) attached? ☒ Yes ☐ No

3. Nature of conveyance:



Assignment



Merger



Security Agreement



Change of Name



Other

Execution Date: December 16, 1999

2. Name and address of receiving party(ies):

Name: University of Florida

Street Address: 1938 W. University Avenue

City: Gainesville State: Florida Zip: 32603

Additional name(s) & address(es) attached? ☒ Yes ☐ No

4. Application number(s) or registration number(s):

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s):

09/404,448

B. Patent No.(s):

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: David W. Hibler
Williams, Morgan & Amerson, P.C.
7676 Hillmont, Suite 250

City: Houston State: Texas Zip: 77040

6. Total number of applications and patents involved: 17. Total fee (37 C.F.R. 3.41) \$ 80.00☒ Enclosed☒ Authorized to be charged to deposit account
if check insufficient or inadvertently omitted8. Deposit account number: 50-0786/4300.012100
(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

David W. Hibler

1/6/2000

Name of Person Signing, Reg. No. 41,071

Signature

Date

Total number of pages including cover sheet, attachments and documents: 7Mail documents to be recorded with required cover sheet information to:
Commissioner of Patents and Trademarks, Box Assignment
Washington, D.C. 20231

02/10/2000 DHSUYEN 00000021 09404448

01 FC:581

40.00 OP

CERTIFICATE OF MAILING
37 C.F.R. 1.8

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as First Class Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on the date below:

January 6, 2000

Date

David W. Hibler

B3K



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APRIL 15, 2000

DOCKETING DEPT.
PTAS

WILLIAMS, MORGAN & AMERSON, P.C. APR 20 2000

DAVID W. HIBLER
7676 HILLMONT, SUITE 250
HOUSTON, TX 77040



101264876A

WILLIAMS, MORGAN & AMERSON

UNITED STATES PATENT AND TRADEMARK OFFICE
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 01/10/2000

REEL/FRAME: 010530/0775

NUMBER OF PAGES: 3

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:

CONWAY, JAMES E.

DOC DATE: 11/24/1999

ASSIGNOR:

HAYWARD, GARY S.

DOC DATE: 11/24/1999

ASSIGNEE:

JOHNS HOPKINS UNIVERSITY, THE
111 MARKET PLACE, SUITE 906
BALTIMORE, MARYLAND 21202

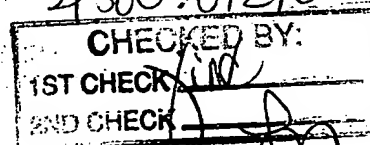
SERIAL NUMBER: 09404448

FILING DATE: 09/22/1999

PATENT NUMBER:

ISSUE DATE:

SEDLEY PYNE, PARALEGAL
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS



ASSIGNMENT

FOR GOOD AND VALUABLE CONSIDERATION, the receipt, sufficiency and adequacy of which are hereby acknowledged, the undersigned, does hereby:

SELL, ASSIGN AND TRANSFER to The Johns Hopkins University (the "Assignee"), having a place of business at 111 Market Place, Suite 906, Baltimore, Maryland 21202, my entire right, title and interest for the United States and all foreign countries in and to any and all improvements which are disclosed in the application for United States Letters Patent, Serial No. **09/404,448** which has been filed on **September 22, 1999** and is entitled "**METHODS FOR LARGE-SCALE PRODUCTION OF RECOMBINANT AAV VECTORS**", such application and all divisional, continuing, substitute, renewal, reissue and all other applications for patent which have been or shall be filed in the United States and all foreign countries on any of such improvements; all original and reissued patents which have been or shall be issued in the United States and all foreign countries on such improvements; and specifically including the right to file foreign applications under the provisions of any convention or treaty and claim priority based on such application in the United States;

AUTHORIZE AND REQUEST the issuing authority to issue any and all United States and foreign patents granted on such improvements to the Assignee;

WARRANT AND COVENANT that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been or will be made to others by the undersigned, and that the full right to convey the same as herein expressed is possessed by the undersigned;

COVENANT, when requested and at the expense of the Assignee, to carry out in good faith the intent and purpose of this assignment, the undersigned will execute all divisional, continuing, substitute, renewal, reissue, and all other patent applications on any and all such improvements; execute all rightful oaths, declarations, assignments, powers of attorney and other papers; communicate to the Assignee all facts known to the undersigned relating to such improvements and the history thereof; and generally do everything possible which the Assignee shall consider desirable for vesting title to such improvements in the Assignee, and for securing, maintaining and enforcing proper patent protection for such improvements;

TO BE BINDING on the heirs, assigns, representatives and successors of the undersigned and extend to the successors, assigns and nominees of the Assignee.

Signature: James E. Conway Date: Nov 19, 1999
Name: James E. Conway James E. Conway November 24, 1999

STATE OF MARYLAND)
) ss.
COUNTY OF Cecil Cecil)

BEFORE ME, the undersigned authority, on this 24 day of November, 1999, personally appeared James E. Conway, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same of his own free will for the purposes and consideration therein expressed.

Elizabeth H. Norris
Notary or Consular Officer

[SEAL]

ELIZABETH H. NORRIS
NOTARY PUBLIC
COMMISSION EXPIRES 3/1/02

Signature: Gary S. Hayward Date: Nov 24, 1999
Name: Gary S. Hayward

STATE OF MARYLAND)
) ss.
COUNTY OF Baltimore)

BEFORE ME, the undersigned authority, on this 24th day of November, 1999, personally appeared Gary S. Hayward, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same of his own free will for the purposes and consideration therein expressed.

Gabriel R. King
Notary or Consular Officer

[SEAL]

my commission expires 6/1/01

02-10-2000

FORM PTO-1595
(Rev. 6-93)

RECEIVED



U.S. Department of Commerce

OMB No. 0651-0011 (exp. 4/94)

JAN 10 PM 12:23

101264876

Patent and Trademark Office

OPR/FINANCE

To be filed with the Commissioner of Patents and Trademarks: Please record the attached original document or copy thereof.

1. Name of conveying party(ies):

James E. Conway and Gary S. HaywardAdditional name(s) of conveying party(ies) attached? ☒ Yes ☐ No

3. Nature of conveyance:

☒ Assignment☐ Merger☐ Security Agreement☐ Change of Name☐ Other

Execution Date: November 24, 1999

2. Name and address of receiving party(ies):

Name: The Johns Hopkins University

Street Address: 111 Market Place, Suite 906

City: Baltimore State: Maryland Zip: 21202

Additional name(s) & address(es) attached? ☒ Yes ☐ No

4. Application number(s) or registration number(s):

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s):

09/404,448

B. Patent No.(s):

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: David W. Hibler

Williams, Morgan & Amerson, P.C.

7676 Hillmont, Suite 250

City: Houston

State: Texas

Zip: 77040

6. Total number of applications and patents involved: 17. Total fee (37 C.F.R. 3.41) _____ \$ 80.00☒ Enclosed☒ Authorized to be charged to deposit account
if check insufficient or inadvertently omitted

8. Deposit account number: 50-0786/4300.012100

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

David W. Hibler

David W. Hibler

1/6/2000

Name of Person Signing, Reg. No. 41,071

Signature

Date

Total number of pages including cover sheet, attachments and documents: 7Mail documents to be recorded with required cover sheet information to:
Commissioner of Patents and Trademarks, Box Assignment
Washington, D.C. 20231CERTIFICATE OF MAILING
37 C.F.R. 1.8

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as First Class Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on the date below:

January 6, 2000

Date

David W. Hibler

David W. Hibler

02/10/2000 DNGUYEN 00000022 09404448

01 FC:581

40.00 09



UNITED STATES
PATENT AND
TRADEMARK OFFICE

APRIL 19, 2002

Chief Financial Officer and Chief Administrative Officer
Washington, DC 20231
www.uspto.gov

PTAS
WILLIAMS, MORGAN & AMERSON, P.C.
MARK D. MOORE
7676 HILLMONT, SUITE 250
HOUSTON, TEXAS 77040



101996745A

DOCKETING DEPT

UNITED STATES PATENT AND TRADEMARK OFFICE
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

APR 25 2002

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 02/19/2002

REEL/FRAME: 012600/0400
NUMBER OF PAGES: 3

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:
FLORIDA, UNIVERSITY OF

DOC DATE: 12/12/2001

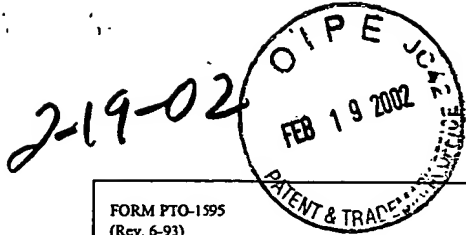
ASSIGNEE:
UNIVERSITY OF FLORIDA RESEARCH
FOUNDATION
223 GRINTER HALL
GAINESVILLE, FLORIDA 32611

SERIAL NUMBER: 09404448
PATENT NUMBER:

FILING DATE: 09/22/1999
ISSUE DATE:

TONYA LEE, EXAMINER
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS





02-27-2002

FORM PTO-1595
(Rev. 6-93)

OMB No. 0651-0011 (exp. 4/94)

101996745
PATENTS ONLY

U.S. Department of Commerce

Patent and Trademark Office

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original document or copy thereof.

1. Name of conveying party(ies):

University of Florida

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

3. Nature of conveyance:



Assignment



Merger



Security Agreement



Change of Name



Other

Execution Date: December 12, 2001

2. Name and address of receiving party(ies):

Name: University of Florida Research
Foundation

Internal Address: 223 Grinter Hall

Street Address:

City: Gainesville State: FL Zip: 32611

Additional name(s) & address(es) attached? ☐ Yes ☒ No

4. Application number(s) or registration number(s):

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s):

09/404,448

B. Patent No.(s):

Additional numbers attached? ☐ Yes ☒ No5. Name and address of party to whom correspondence concerning
document should be mailed:Name: Mark D. Moore
Williams, Morgan & Amerson, P.C.
7676 Hillmont, Suite 250

City: Houston State: Texas Zip: 77040

6. Total number of applications and patents involved: 17. Total fee (37 C.F.R. 3.41) \$ 40.00☒ Enclosed☒ Authorized to be charged to deposit account
if check insufficient or inadvertently omitted

8. Deposit account number: 50-0786/4300.012100

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

MARK D. MOORE

02/01/02

Name of Person Signing, Reg. No. 42,903

Mark D. Moore

Date

Total number of pages including cover sheet, attachments and documents: 3

02/27/2002 6TON11 00000024 09404448

01 FC:581

40.00 OP

Mail documents to be recorded with required cover sheet information to:
Commissioner of Patents and Trademarks, Box Assignment
Washington, D.C. 20231CERTIFICATE OF MAILING
37 C.F.R. 1.8I hereby certify that this correspondence is being deposited with the U.S. Postal Service as
First Class Mail in an envelope addressed to: Assistant Commissioner of Patents and
Trademarks, Washington, D.C. 20231, on the date below:February 1, 2002
Date

Mark D. Moore

ASSIGNMENT FROM THE UNIVERSITY OF FLORIDA
TO THE
UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INC.

In consideration of one dollar (\$1.00) and other good and valuable consideration, the UNIVERSITY OF FLORIDA, existing by virtue of the laws of the State of Florida, and having an office at 223 Grinter Hall, Gainesville, Florida 32611, sells and assigns to the UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INCORPORATED, a Florida not for profit corporation, having its office at 223 Grinter Hall, Gainesville, Florida 32611, its successors and assigns, its entire right, title and interest throughout the world in and to the improvements in :

A Scaleable Method for Production of Recombinant AAV, UF#-10014, U.S. Serial No. 09/404,448, filed 4/21/99, created by Barry J. Byrne, Serge Zolotukhin, Nicholas Muzyczka, James E. Conway, and Gary Hayward, inventors;

and in and to said application and all patents (foreign and domestic) which may be granted therefore and thereon, and all divisions, reissues, continuations and extensions thereof (foreign and domestic), subject to performance by the UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INCORPORATED, of the obligations of the UNIVERSITY OF FLORIDA under the UNIVERSITY OF FLORIDA's Patent Policy with regard to the above-described invention, and the UNIVERSITY OF FLORIDA covenants that it has full right to so sell and assign; and it authorizes and requests the Commissioner of Patents and Trademarks to issue all patents on said improvements or resulting therefrom to said UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INCORPORATED, as assignee; and it agrees that it will communicate to said UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INCORPORATED, or its representatives any facts known to it respecting said improvements, and testify in any legal proceedings, sign all lawful papers, execute all divisional, continuing and reissue applications, make all rightful oaths and generally do everything possible to aid said UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INCORPORATED, its successors, assigns and nominees, to obtain and enforce proper protection for said improvements in all countries.

Executed this 12 day of December, 2001.

UNIVERSITY OF FLORIDA


By: _____

CHARLES E. YOUNG, PRESIDENT

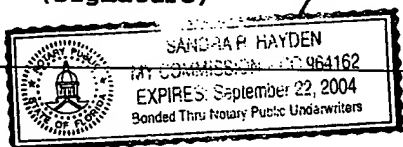
Assignment from UF to UFRFI
Page two of two

COUNTY OF ALACHUA
STATE OF FLORIDA

The foregoing instrument was acknowledged before me this 12 day
of December, 2001, by Charles E. Young, President, who is personally known to
me and who did take an oath.



(Signature)

Notary Public, Commission No. _____




(Name of Notary typed, printed or stamped)

Accepted by UNIVERSITY OF FLORIDA
RESEARCH FOUNDATION, INC.

By: 
Winfred Phillips, Vice President

Attest:





US006783972B1

(12) **United States Patent**
Byrne et al.(10) **Patent No.:** **US 6,783,972 B1**
(45) **Date of Patent:** **Aug. 31, 2004**(54) **METHODS FOR LARGE-SCALE
PRODUCTION OF RECOMBINANT AAV
VECTORS**

- (75) Inventors: **Barry J. Byrne**, Gainesville, FL (US);
James E. Conway, Elkton, MD (US);
Gary S. Hayward, Towson, MD (US);
Nicholas Muzyzcka, Gainesville, FL
(US); **Sergei Zolotukhin**, Gainesville,
FL (US)
- (73) Assignee: **University of Florida Research
Foundation**, Gainesville, FL (US)
- (*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/404,448**(22) Filed: **Sep. 22, 1999****Related U.S. Application Data**

- (60) Provisional application No. 60/101,507, filed on Sep. 22,
1998.
- (51) Int. Cl.⁷ **C12N 7/01; C12N 15/09;
C12N 15/00; C12P 21/06; C07H 21/04**
- (52) U.S. Cl. **435/235.1; 435/320.1;
435/325; 435/456; 435/69.1; 536/23.1;
514/44**
- (58) Field of Search **435/325, 235.1,
435/320.1, 456, 69.1; 536/23.1; 514/44**

(56) **References Cited****U.S. PATENT DOCUMENTS**

5,173,414 A	12/1992	Lebkowski et al.	435/172.3
5,354,678 A	10/1994	Lebkowski et al.	435/172.3
5,589,377 A	12/1996	Lebkowski et al.	435/240.2
5,661,033 A	8/1997	Ho et al.	435/320.1
5,693,531 A	* 12/1997	Chiorini et al.	435/325
5,780,280 A	7/1998	Lebkowski et al.	435/172.3
5,846,707 A	12/1998	Roizman	435/5
5,869,305 A	2/1999	Samulski et al.	435/172.3
5,879,934 A	3/1999	DeLuca	435/320.1
5,928,913 A	* 7/1999	Efstathiou et al.	435/172.3
5,945,335 A	8/1999	Colosi	435/369
5,998,174 A	* 12/1999	Glorioso et al.	435/91.4

FOREIGN PATENT DOCUMENTS

WO	WO 95/06743	3/1995	
WO	WO 95/06743 A2 *	3/1995	435/320.1
WO	WO 97/20935	6/1997	
WO	WO 99/20778	4/1999	

OTHER PUBLICATIONS

Stephen A. Rice et al, Genetic Evidence for Two Distinct Transactivation Functions of the Herpes Simplex Virus & Protein ICP27, *Journal of Virology*, Apr. 1990, pp 1704-1715.*

Nicholas Muzyzcka et al, In vitro replication of adeno-associated virus DNA, seminars in Virology, vol. 2, 1991: pp 281-290.*

Buller, "Herpes simplex virus types 1 and 2 completely help adenovirus-associated virus replication," *J. Virol.* 40:241-247, 1981.

Conway et al., "Recombinant adeno-associated virus type 2 replication and packaging is entirely supported by a herpes simplex virus type I amplicon expressing Rep and Cap," *J. Virol.* 71:8780-8789, 1997.

Heilbronn et al., "The adeno-associated virus rep gene suppresses herpes simplex virus-induced DNA amplification," *J. Virol.* 64:3012-3018, 1990.

Johnston et al., "HSV/AAV hybrid amplicon vectors extend transgene expression in human glioma cells," *Hum. Gene Ther.* 8:359-370, 1997.

Mishra and Rose, "Adeno-associated virus DNA replication is induced by genes that are essential for HSV-1 DNA synthesis," *Virology* 179:632-639, 1990.

Rose and Koczot, "Adenovirus-associated virus multiplication VII. Helper requirement for viral deoxyribonucleic acid and ribonucleic acid synthesis," *J. Virol.* 10:1-8, 1972.

Thomson et al., "Acquisition of the human adeno-associated virus type-2 rep gene by human herpesvirus type-6," *Nature* 351:78-80, 1991.

Thomson et al., "Human herpesvirus 6 (HHV-6) is a helper virus for adeno-associated virus type 2 (AAV-2) and the AAV-2 rep gene homologue in HHV-6 can mediate AAV-2 DNA replication and regulate gene expression," *Virology* 204:304-311, 1994.

Weindler and Heilbronn, "A subset of herpes simplex virus replication genes provides helper functions for productive adeno-associated virus replication," *J. Virol.* 65:2476-2483, 1991.

Conway et al., "High-titer recombinant adeno-associated virus production utilizing a recombinant herpes simplex virus type I vector expressing AAV-2 Rep and Cap," *Gene Therapy*, 6(6):986-993, 1999.

Database WPI, Section Ch, Week 199933, Derwent Publications Ltd., London, GB; AN 1999-386309, XP002136602 & CN 1 213 699 A (Inst Birolgy China Prevention Medical A), Apr. 14, 1999, abstract.

International Search Report mailed May 17, 2000 (PCT/US99/22052; 4300.012110).

Vincent et al., "Analysis of recombinant adeno-associated virus packaging and requirements for rep and cap gene products," *J. Virol.* 71(3):1897-1905, 1997.

Yuelong et al., "A novel recombinant adeno-associated virus vector packaging system with HSV-1, amplicon providing helper functions," *Science in china Series C Life Sciences*, 43:465-470, 1999, Abstract only.

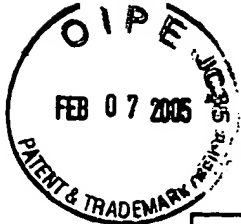
Zhang et al., "High-titer recombinant adeno-associated virus production from replicating amplicons and herpes vectors deleted for glycoprotein H," *Hum. Gene Ther.* 10:2527-2537, 1999.

Feudner et al., "Optimization of recombinant adeno-associated virus production using an herpes simplex virus amplicon system," *J. Virol. Meth.* 96:97-105, 2001.

* cited by examiner

Primary Examiner—Gerry Leffers(74) **Attorney, Agent, or Firm**—Edwards & Angell, LLP(57) **ABSTRACT**

Disclosed are HSV-1 amplicons that supply all necessary helper functions required for rAAV packaging and methods for their use. These HSV-1 amplicons have been shown to be capable of rescuing and replicating all forms of rAAV genomes including rAAV genomes introduced into cells by infection of rAAV virions, rAAV genomes transfected into cells on plasmids or proviral rAAV genomes integrated into cellular chromosomal DNA. Also provided are methods for preparing high-titer rAAV vector compositions suitable for gene therapy and the delivery of exogenous polynucleotides to selected host cells.



Application No. (if known): 09/404,448

Attorney Docket No.: 60693(49163)

Certificate of Express Mailing Under 37 CFR 1.10

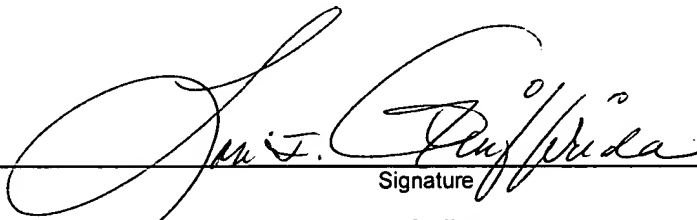
I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail, Airbill No. EV 307 814 144 US in an envelope addressed to:

MS Post Issue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

on

2/7/05

Date


Signature

Lori Giuffrida

Typed or printed name of person signing Certificate

Registration Number, if applicable

(203) 975-7505
Telephone Number

Note: Each paper must have its own certificate of mailing, or this certificate must identify each submitted paper.

Certificate of Correction (1 page)

Notice of Recordation of Assignment (from inventors to JHU)

Notice of Recordation of Assignment (from other inventors to Univ. of FL)

Notice of Recordation of Assignment (from Univ. of FL to Univ. of FL
Research Corp. Inc.)

Copy of front page of Issued Patent

Request for Certificate of Correction (Fee Required)

Charge \$100.00 to deposit account 04-1105